

# Joint Chiefs' Landscape Restoration Partnership (LRP) Project FY 2016 Final Report



## State: WEST VIRGINIA

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## West Virginia Restoration Venture (WVRV)

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### Outcomes Achieved and Benefits Realized:

*Describe the benefits resulting from this project. This should include positive impacts and changes to ecological, social, and economic indicators. For example, impacts on T&E species or concerned wildlife, long term ecosystem benefits expected, ecosystem services/financial savings due to natural resources enhancement (i.e. fire protection, water quality, and recreational value), number of homes protected, watershed acres improved, stream miles enhanced, community water sources protected, employment opportunities created, educational opportunities provided, community safety enhancement. Include how the outcomes match the goals of the proposal noting why there are differences.*

The West Virginia Restoration Venture (WVRV) was instrumental in helping WV Natural Resources Conservation Service (NRCS), the Monongahela National Forest (Monongahela), the WV Division of Forestry (WVDOF), and their partners to develop a new business model focused on implementing landscape-scale restoration goals through the creation of a restoration economy. Opportunities provided by Joint Chief's LRP funding in FY14- FY16 were maximized through leveraged contributions from partners in skills/expertise, staff and additional funds. Throughout the project, federal, state, and non-governmental organization (NGO) partners coordinated their activities to achieve unprecedented levels of on-the-ground ecological, social and economic outcomes within the priority watersheds on federal, state, and private lands.

### WVRV Benefits/Outcomes from FY2014-2016 (Refer to **Appendix A - Project Briefing Papers for individual success stories**):

- Red spruce restoration efforts continued through several facets of the project ([www.restoreredspruce.org](http://www.restoreredspruce.org)):
  - The Ecological Restoration Team coordinated by the WV Office of The Nature Conservancy released understory red spruce seedlings on over 1000 acres with treatment effectiveness monitoring on over 500 acres.
  - Nearly 80,000 seedlings were planted on nearly 800 acres with assistance by volunteers and contractors (see Mower Tract bullet below).
  - Spruce restoration resulted in habitat improvement for spruce-obligate species, including the threatened Cheat Mountain salamander, the recently delisted West Virginia northern flying squirrel, and locally rare species like snowshoe hare and fisher.
- The Mower Tract Mine Land Restoration project on Cheat Mountain continues to grow with the support of the new partnerships developed through WVRV. This tract of land is located in the heart of the Central Appalachians and provides vital north-south connectivity within the red spruce-dominated landscape in the high elevations of the central Appalachians. As native red spruce are replanted and the soil and water quality resources are restored, this segment of landscape serves as a bridge and addresses fragmentation issues for threatened, endangered, and sensitive (TES) species. (See the video link in the **Blogs, Videos, and Articles** section on p. 15 to watch and listen to the story about how partners are restoring this valuable landscape.)

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- WV TNC's NNIS crew led invasive weed control efforts that included treatments on over 2,300 acres of the Monongahela's priority sites, almost 600 acres on the George Washington-Jefferson National Forest in Region 8, and over 2,000 acres on private lands. This project recognizes that by treating the landscape we cross over jurisdictional boundaries (<http://www.phcwpma.org/>).
- Watershed restoration efforts on the Monongahela leveraged resources, capital and expertise from WV Trout Unlimited and the Canaan Valley Institute to create several crews that focused on various aspects of watershed restoration. This partnership has resulted in improving watershed health in the East Fork Greenbrier, West Fork Greenbrier, and Little River watersheds. These efforts led to an improved condition under the FS Watershed Condition Framework for the East Fork Greenbrier, and substantial progress toward an improved condition in the other two watersheds.
- Trout Unlimited and NRCS led an impressive campaign working with private landowners to develop conservation plans and treat miles of streams flowing into the Potomac headwaters. Trout Unlimited acted as a bridge in the transfer of science and technology and assisted landowners in using natural stream design and stabilization concepts to restore riparian habitat through the NRCS EQIP program.
- Recreation and watershed restoration goals were combined on several projects on the Monongahela. In 2016, WVRV made a new connection with the Greenbrier River Watershed Association. High value dispersed recreation sites were greatly improved along Anthony Creek. Activities included the development of interpretive panels for visitor education.
- WVRV continued to improve key high elevation range allotments, pasture lands, and other wildlife habitats.
  - NRCS worked with its clients who are FS permittees to address livestock needs and wildlife needs resulting in an integrated land use that focuses on practices that help to manage the watershed in a healthy manner by protecting water quality and improving habitat for critical terrestrial species and neotropical migratory birds such as golden wing and cerulean warblers.
  - The Monongahela collaborated with the West Virginia Division of Natural Resources (WV DNR) and other partners to restore and create early-successional habitat (ESH), particularly in pasture (range allotment) borders. Feathered edges along pasture lands are an important strategy for the Appalachian Mountain Joint Venture's (<http://www.amjv.org/>) efforts, which are intended to improve habitat conditions for ESH species such as golden-winged warblers.
  - Vernal pools were created to establish amphibian habitat and ephemeral feeding grounds for bats.
- Ecological Site Inventory within the high elevation red spruce ecosystem continues with NRCS, USFS, WVDOR, and West Virginia University (WVU). Data collection has been completed for the development of 4 more Ecological Site Descriptions, totaling 6 ESDs to be completed in 2018. ESDs provide state and transition models for various ecological communities within the landscape. Soil climate mapping and studies are also adding critical information for developing a set of interpretations resulting in tools and criteria that are being used to help assess where limited resources should be placed on the landscape to facilitate restoration.
- The partnership among NRCS, WVU, and FS resulted in a regional effort to use real soils data to calculate the soil carbon pool for MLRA 127. Researchers worked in harmony with the federal partners to collect data and develop a model to display soil carbon stocks along with the FS FIA above ground carbon stocks. This total package is now being used to assess the full potential of carbon sequestration of the region and what practices can accelerate restoring the soils and carbon pool, which was depleted a century ago the unsustainable cutting, wildfire, and severe erosion associated with the railroad logging era. Ultimately, the agencies would like to work with FS Research to develop a set of BMPs for carbon management that compliment healthy watershed management and help the agency to comply with the 2012 Planning Rule.
- Creating early successional habitat in the high elevation ecosystem has been a long time challenge with the historic restrictions for managing in red spruce forests, concerns for threatened, endangered, and sensitive (TES) species, and the challenges of operations at higher elevations. Thanks to

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cooperation among the Ruffed Grouse Society (RGS), WV DNR, Monongahela, and WV DOF, land managers on state, federal and private lands can now utilize a shedder mulcher machine to create small openings and feathered edges to invite wildlife and create habitat in a mosaic pattern in young, dense regenerating spruce stands. This machine can also be used to feather hard edges of intermixed spruce and hardwood stands resulting in red spruce “release” and creating larger savannahs for a mixture of wildlife species that require this intermingled open space with mature forest habitat.

- WVRV funds expended through NRCS EQIP continue to provide exponential benefits on private lands for conservation efforts, including the installation of over 600,000 feet of fence, which has protected over 20 miles of riparian corridors. Water quality improvements have also been achieved by providing off-stream livestock water developments, installing grazing systems, roofed waste storage facilities, heavy use area stabilization, and seasonal high tunnels. Using more than 30 NRCS approved conservation practices, the overall nutrient load, sedimentation, and soil erosion has decreased in the WVRV watersheds.
- The adaptation of NRCS staff and partners to working within the bounds of a landscape scale conservation initiative have shaped the way the agency does business in the state, and will continue to play a vital role in the future of conservation delivery.
- The stream restoration design work by NRCS, with help from Trout Unlimited, has built a knowledge and skill set within the agency engineering staff. They have continued to excel in the conceptualization and design of advanced and complex stream restoration techniques. This will be invaluable to the future of riparian conservation in the state, and has removed barriers to large scale stream habitat improvements.
- Funds provided to the WVDOT through FS State and Private have been critical in helping the State continue to prepare Forest Stewardship Conservation plans for private landowners as well as implementing practices on State Forests. With the severe cutbacks in FY16 and the loss of more than half of the State’s DOF foresters, these funds helped the agency to follow through on some of their commitments to WV citizens and complete several restoration projects on State forest lands. WVDOT continues to work with both NRCS and FS to implement the new forestry restoration practices in their high elevation lands. This is part of the learning and knowledge transfer of WVRV.

In summation, all of these benefits and outcomes are acting to address priority areas where projects are needed to direct the headwater systems in the Central Appalachians towards restoration and resiliency. The practices being implemented are part of a new type of conservation, and skill sets are being developed by contractors that can play a role in a greater restoration economy.

### **Community Benefits:**

*Briefly describe benefits to the community or counties achieved through this partnership, as applicable.*

### **Employment Opportunities Created:**

WVRV funds from FY14-16 provided critical funding to allow for the Monongahela, WV NRCS, and FS SPF to fund agency staff to design, manage and implement a broad array of restoration work in addition to supporting WV agencies suffering from state budget cuts. This included directly supporting WV Dept. of Agriculture (WVDA), WVDNR and WVDOT staff to implement restoration goals and improved ecological outcomes. This improved collaboration and created mutually beneficial outcomes by leveraging each agency’s assets while maintaining employment opportunities for under-funded state employees. In addition, non-profit partners played an integral role in creating additional employment opportunities in West Virginia including:

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## IMPLEMENTATION OF A RESTORATION ECONOMY - ADDITIONAL NON-AGENCY JOBS CREATED BY FY2014-16 WVRV FUNDING:

Organization	Employment	Work	# Jobs Created Annually (estimate)
Trout Unlimited	Grip hoist crew	Restoration of stream function and improved fish habitat through small/medium woody material placement and riparian planting.	6
	Equipment operators	Watershed restoration through large woody materials placement, road decommissioning and Aquatic Organism Passage (AOP) creation.	4
	Riparian fencing crew	Water quality protection and enhancement including assisting with alternate water source for livestock.	5
	Engineer, Manager	Project management, CAD design and engineering, natural stream design	2
Canaan Valley Institute	Equipment operators	Watershed restoration through large woody materials placement, road decommissioning/recreational trail conversion and Aquatic Organism Passage (AOP) creation.	4
	Engineer, Manager	Project management, CAD design and engineering	2
The Nature Conservancy (WV)	Ecological Restoration Crew	Red spruce release by mechanical and herbicide treatments as well as monitoring of study plots	3
	PHCWPM Crew	Herbicide and mechanical treatments to control NNIS on high-priority sites on public and private lands.	3
Green Forest Works	Equipment operator (contract)	Heavy equipment operator for mineland restoration.	2
	Tree planting (contract)	Tree planting in restored minelands of red spruce and 50+ native plant species	100 work days/year
	Nursery workers	9 different small suppliers in the region providing up to 50+ species	150 work days/year
West Virginia Highlands Conservancy	Botanical specialist	Seed collection of 50+ species from project vicinity, storage and assistance with propagation	1 (+ volunteers)
Small Private Business	Fence Contractor & Crew	Water quality protection and riparian enhancement through livestock exclusion and installation of interior fences for grazing systems	15
	Heavy Equipment Operators	Restoration of stream function and improved fish habitat through implementation of NRCS/TU natural stream design, as well as the installation of heavy use areas and waste storage facilities	6
	General Contractor & Crew	Water quality protection and riparian enhancement through the development of alternate water sources for livestock, as well as the installation of heavy use areas and waste storage facilities	12
	Subcontractors for Concrete	Water quality protection through installation of heavy use areas and waste storage facilities	3
<b>Estimated Jobs Created</b>			<b>68+ Jobs</b>

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### *Educational Opportunities Provided:*

- Partners like WV Trout Unlimited and the Canaan Valley Institute transferred knowledge gained through watershed restoration on the Monongahela to NRCS, private landowners, and contractors.
- In 2015, Joint Chief's LRP funds facilitated a three day forest management/bird habitat workshop attended by over 60 land managers from four states and a variety of state and federal agencies and NGOs. Workshop participants included agency personnel and consultants that work regularly with private land owners and can share the knowledge gained at this workshop with them. Bird-friendly land management is critical for providing a suitable landscape for declining bird species that depend on early successional habitat across the region. This workshop also provided a template that FS Region 9 plans to use, with location-specific modifications and partners, for additional management workshops across the Region as additional funding becomes available.
- Using leveraged contributions from Trout Unlimited, in 2014 a Large Woody Material (LWM) workshop was attended by 70 participants, including potential partners and other practitioners, federal/state/local agencies, NGO's, academia, and private citizens. Direct results included the placement of three LWM structures in Poca Run, on the East Fork of the Greenbrier River, and knowledge transfer that was utilized in FY2015-16 and in future work on private lands. LWM watershed projects are being routinely planned as part of future work in the priority watersheds by NRCS, FS, and WVDOT. A demonstration project was completed in 2015 by TU on Seneca Creek at the highly visible Seneca Rocks Discovery Center location along the North Fork of the South Branch of the Potomac River. This FS Visitor Center sees hundreds of thousands of visitors a year. Education kiosks explain the importance of natural stream design and restoration to promote habitat for species of recreational importance like native brook trout. TU continually promotes healthy watershed management and educates citizens about WV fisheries (<http://www.tu.org/events/seneca-creek-save-our-streams-workshop?gid=5341> ).
- WVRV created many volunteer opportunities for the general public to be directly involved in landscape-scale restoration efforts including several tree planting events and invasive weed pulls with agency staff and partners including Green Forest Works, The Nature Conservancy, and Appalachian Forest Heritage Area AmeriCorps. Accomplishments included over 5000 spruce trees planted by over 300 college, high school, and middle school students, largely in reclaimed mine land areas. Volunteer efforts to remove invasive weeds focused on Garlic Mustard Challenge events from FY2014-16 with nearly 5000 volunteer hours and over 30,000 pounds of garlic mustard plants pulled. (<http://www.phcwpma.org/garlicmustard/>)
- New constituencies became involved in several projects on the Monongahela that focused on improving both recreational opportunities and improved watershed conditions. For example, the Greenbrier River Watershed Association worked with Marlinton-White Sulphur District recreation staff, WV DNR and Appalachian Forest Heritage Area AmeriCorps members to decompact 6 user-created dispersed recreation sites, remove invasive weeds and then mulch and reseed the area along Anthony Creek with native grasses, forbs, and wildflowers. Hardened camping pads were constructed to protect soil and provide suitable sites to camp that improve visitor experiences while maintaining water quality. Interpretive panels were installed at each site with a new "Respect the River" message and pertinent recreation information. Restoration efforts will continue in FY17 to include an outreach campaign for site users and plantings of native shrub species at key sites in the project area.
- On the Monongahela's Greenbrier Ranger District, the input of recreation user groups was incorporated into restoration project plans to decommission roads in the Upper Greenbrier watershed with the Canaan Valley Institute. Equestrian, mountain biking and hiking groups spent a year collecting information that was used to then convert former roads into recreational trails while also restoring the watershed.



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- The partnership has invested in sponsoring learning tours and fieldtrips. We invite key and interested members of the greater partnership to transfer and share our knowledge. This includes training new employees within the agencies, talking to delegation members, highlighting various private landowners, engaging citizen action groups and having them on project sites. This also includes sponsoring trips for the land grant universities for various graduate school courses and programs. The audience we are trying to reach is diverse. It is a slow but steady recruitment of likeminded and not so likeminded citizens who value the services that these headwater systems provide to communities. WVRV is often highlighted as a catalyst in bringing together the landscape restoration movement in WV. We now link all of the initiatives together and use a comprehensive message that despite the funding mechanism or the initiative, we all are committed towards our overriding goal and mission of combining our conservation strategies from the headwaters to downstream landscapes.
- WVDOF held a workshop in 2016 for the state's practicing and licensed foresters. Continuing education credits were offered to foresters who attended to learn about managing red spruce with intermingled hardwood stands as a part of commercial timber extraction. Researchers from the FS NRS presented recent scientific findings with their WVU partners. A field trip highlighted recent practices at Kumbrow State Forest. Approximately 30 attendees were present.
- In 2014, NRCS, WVU, and FS hosted the Technical Soils Seminar: Soil and Ecological findings in the Central Appalachian Red Spruce Ecosystem for conservation scientists and partners. New findings for soil mapping, soil carbon, and ecological site descriptions for the red spruce ecosystem were presented and recorded as part of the USDA NCSS Learning Center. Continuing education credits were offered to engineers, foresters, conservation planners, and other needing scientific credits to maintain professional certifications.  
[https://content.govdelivery.com/attachments/USDANRCS/2014/03/26/file\\_attachments/280565/SeminarPresentation040914-rev.pdf](https://content.govdelivery.com/attachments/USDANRCS/2014/03/26/file_attachments/280565/SeminarPresentation040914-rev.pdf)
- In 2014 and 2015, the National Cooperative Soil Survey (MLRA 127) members – NRCS, WVU, WVDOF, WV DNR, and WV State University – all came together to participate in 2 separate technical field weeks to gather data and share knowledge about the soils, botany, and ecology of the red spruce ecosystem. Over 25 technical specialists, professors, and scientists participated at each field week.

### ***Community Safety Enhanced:***

The WVRV partnership addressed community safety in several ways. Helping landscapes become more resilient to a changing climate means addressing multiple aspects of vulnerability. In 2014, the partners participated in an assessment of vulnerability of the central Appalachians over the next 100 years: *Central Appalachians forest ecosystem vulnerability assessment and synthesis: a report from the Central Appalachians Climate Change Response Framework Project* (<http://www.nrs.fs.fed.us/pubs/47885>). This effort highlighted the knowledge of regional experts on various resource issues such as flooding, drought, forest health related pests, and NNIS threats to the landscape and the potential economy. The projects and practices selected by the partnership look to address those threats in some manner by stabilizing, restoring, and/or improving the ecosystem services provided by the high elevation landscapes of the Central Appalachians. This includes evaluating water quantity and water quality through an integrated resource lens. Water security is a crucial component of community safety. Watersheds that suffer from legacy impacts can deliver too much water or too little water depending on conditions at any given time. Watershed restoration helps to manage the extremes and can contribute to stability in these rural underserved communities.

While wildfire can present a localized threat to communities in the central Appalachians, it is less of a threat than it was during the railroad logging era. However, historically, uncontrolled wildfire helped drive these ecosystems to the brink and resulted in untold amounts of erosion and stream sedimentation. The erosion, sedimentation, and hydrologic impacts destabilized entire headwater river systems and contributed to major



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flooding in cities such as Pittsburgh, PA, Charleston, WV, Morgantown, WV, Beckley, WV, and small downstream communities of the Potomac watershed. A commitment by the United States to prevent such impacts from happening again was a primary reason for the creation of the Monongahela. Continuing to build resiliency through ecosystem and watershed restoration will be key to maintaining a landscape that can respond to drought and not experience such catastrophic resource losses.

### *Dollars Invested in Communities:*

#### **Federal Funds Expended:**

	<b>Total FY2014 – FY 2016</b>
NRCS EQIP Financial & Technical Assistance (LRP Funds only) <i>*FY14 and FY15 6.9% TA FY16 TA 9%</i>	<b>EQIP FA (TOTAL) = \$5,561,571</b> <b>EQIP TA (TOTAL) = \$441,897</b>
Other NRCS Funds (Non-LRP Funds such as CTA, General EQIP)	<b>N/A</b>
FS - National Forest System	<b>\$3,208,523</b>
FS- Hazardous Fuels	<b>N/A</b>
FS- State and Private Forestry	<b>\$550,000</b>
FS Additional support from Non-LRP Funds*	<b>\$200,000</b>
Other (partner investments)	<b>\$2,017,170</b>
<b>Total</b>	<b>\$11,979,161</b>

\*In FY14, and also to some degree in FY15, FS LRP funds were not used for FS salary. All dollars went to implement the project. Therefore, an estimation of salary and supplies were included for FS Non-LRP funds.

#### **Non-Federal Partner Contributions:**

*Concisely describe how this project enabled you to achieve higher quality or more effective outcomes than could have been accomplished by a single agency.*

WVRV is a true landscape scale project crossing federal, state, and private lands along the ridges of the Central Appalachian Mountains. The types of conservation practices identified to restore this high elevation landscape could not have been accomplished without this diverse partnership. Most importantly, the federal and state agencies needed the NGO partners to be a neutral voice in delivering the vision and message to private landowners who hold critical landscape sections in this remote part of the eastern US. We found that when our government voice could not be heard, the partners' approach and offer for technical assistance was accepted. The NGO partners were able to deliver the restoration message in a manner that made sense to the private landowners and helped them to feel empowered and willing to participate in WVRV. The task of restoring this unique high elevation landscape is daunting, and the work capacity limitations are enormous relative to the huge workload. The



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agencies needed each other to address that workload in a way that accounted for the spatial arrangement of the need across the multi-ownership landscape. The agencies needed the NGO partners to help build the workforce capacity in the community and provide the restoration services for implementing the projects. The NGO partners needed the science and technology that the FS brings to the table for directing restoration activities and methodologies, and they needed the customer base and plans that the NRCS has with their clients. Many of the services needed, like the skill set for adding large wood to streams, did not exist in the local area prior to 2014. The WVRV vision is just the beginning of a restoration economy for these high priority watersheds.

<b>Partner</b>	<b>Non-Cash</b>	<b>In-Kind</b>	<b>Total 2014 - 2016</b>
<i>WV Trout Unlimited</i>	<i>744,562</i>	<i>45,472</i>	<i>790,034</i>
<i>American Chestnut Foundation</i>	<i>243,463</i>	<i>8000</i>	<i>251,463</i>
<i>Green Forest Works</i>	<i>50,400</i>	<i>200,000</i>	<i>250,400</i>
<i>WV TNC</i>	<i>228,377</i>	<i>0</i>	<i>228,377</i>
<i>West Virginia University</i>	<i>155,000</i>	<i>0</i>	<i>155,000</i>
<i>Ruffed Grouse Society</i>	<i>138,851</i>	<i>0</i>	<i>138,851</i>
<i>Canaan Valley Institute</i>	<i>101,410</i>	<i>29,510</i>	<i>130,920</i>
<i>WV Highlands Conservancy</i>	<i>15,000</i>	<i>25,000</i>	<i>40,000</i>
<i>American Forest Foundation</i>	<i>0</i>	<i>32,125</i>	<i>32,125</i>
<b>Project Totals</b>	<b><i>\$1,677,063</i></b>	<b><i>\$340,107</i></b>	<b><i>\$2,017,170</i></b>

\*All non-federal partner contributions were implemented through grants and agreements. Therefore, no cash was received by either federal agency. This table reflects the partner contributions as described by the instruments used by USDA. In the non-cash category, we included partner salaries and partner funds that were paid directly to contractors to implement restoration work.

\*\*Appendix B contains a list of all partners who have participated in WVRV from 2014-2016. Many of their contributions were smaller dollar amounts and in-kind services.

### Partner Conservation Highlights:

*Concisely describe in one to three sentences a unique or significant conservation highlight resulting from activities of the partnerships.*

Throughout the duration of WVRV, the agencies and partners implemented restoration work in a way that emphasized the connectivity of the ecological communities on the landscape, as well as the connectedness of the partners and human communities that work and live on that landscape. Restoration sites were arranged in a way that began re-establishing the natural connectedness of stream networks, spruce forests, and other restored communities. This connectedness required cross-boundary collaboration that could only have been accomplished by the unique mix of NGOs and federal and state agencies that worked together seamlessly through the WVRV partnership.



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## Project Accomplishments:

### Federal Lands

Activity/Treatment	Total 2014-2016	
	Target	Actual
<b>Watershed Restoration Project</b>		
Upper Greenbrier Watershed Improvement – Road Decommissioning	12 miles	40.7 miles, 7.3 miles stream enhancement
Upper Greenbrier Watershed Improvement – Large Woody Material (stream habitat enhancement)	15 stream miles	30 stream miles + 1,476 feet of streambank and shoreline protection from Natural Stream Design work
Upper Greenbrier Watershed Improvement – Aquatic Organism Passage (stream habitat enhancement)	4 AOPs	6 AOP sites connected 49 stream miles, + 4 AOP designs
Road, Stream and Aquatic Surveys for Big Run Watershed and upper Laurel Fork Watershed (Upper North Fork So. Branch Potomac River) (inventory data acquired)	200 miles roads 55 miles of stream	200 miles roads 55 miles of stream
<b>Lambert Restoration Project</b>		
Mined land reforestation/restoration (forest vegetation established and terrestrial habitat enhanced)	250 acres	350 acres
Mined land restoration site prep by deep ripping (soil and water improvement)	80 acres	275 acres
Vernal pools and other wetlands created on restored mine land (amphibian and other spp. habitat enhanced; soil and water improved)	140 wetlands	305 wetlands created
<b>Early Successional Habitat project</b>		
Early successional habitat enhanced or restored (forest vegetation improvement, terrestrial habitat improvement)	350 acres	429 acres
Pasture cutback borders for ESH habitat and spruce release (terrestrial habitat improvement, forest vegetation improvement)	350 acres	500 acres
<b>Ecological Restoration Team (ERT)</b>		
Understory spruce release (terrestrial habitat enhanced and forest vegetation improved)	Up to 1800 acres	1053 acres

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Activity/Treatment	Total 2014-2016	
	Target	Actual
Spruce planting (terrestrial habitat enhanced and forest vegetation established)	300 acres	525 acres + 320 acres on adjacent private lands
NNIS treatment	Up to 2700 acres	2384 acres (Monongahela) + 595 acres (GWJNF) + 2085 acres adjacent private
<b>NRCS Ecological Site Description and Soil Survey Updates in High Elevation Red Spruce Ecosystem</b>	18,750 acres	157,000 acres
<b>Recreation and Watershed Rehab Crews</b>		
USFS Watershed Restoration/Rehabilitation Trail Crew (soil and water improvement, trail maintenance)		6 miles of trail improved + 50-100 drainage structures
Anthony Creek Dispersed Recreation Area Restoration Site (soil and water improvement)		6 dispersed recreation sites decompacted, NNIS removed and reseeded with native plants
Gladly Dispersed Recreation Area Restoration (soil and water improvement)		6 acres of watershed improvement 20 dispersed campsites restored Decommissioning of 1 dispersed site Improvement of 3 camping loop roads
Smokehole Recreation Facility Decommissioning and Restoration (terrestrial [riparian] habitat improvement)	0	1 acre and removal of 1 facility
<b>USFS Range Allotment Pasture Improvements</b>		
Riparian Fence Constructed	3.35 miles	11.69 miles
Riparian Area Protected (terrestrial and stream habitat improvement)	300 acres	915 acres
Spring Development	0	7
Watering Facility	0	17
<b>Prescribed Fire and Habitat Restoration</b>		
Hopkins Prescribed Burn (hazardous fuels treatment, terrestrial habitat enhancement)	900 acres	962 acres of oak and pine fire-dependent ecosystem

\*In addition to the target units that were planned for WVRV for federal lands from FY14-FY16, multiple products and tools were developed to help provided direction and a scientific basis for establishing landscape scale restoration efforts in the Central Appalachians. Multiple briefing papers were provided in FY14, 15, and 16 that describe in detail these additional outcomes that are not measured as part of a database of record. (For example: The Soil Carbon Mapping Project, multiple publications referencing NRCS ESD development in red spruce (Nauman et al; 2015) and multiple video productions and efforts at looking valuation of ecosystem services from the landscape.)

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## State or Tribal Lands

Activity/Treatment	Total 2014 - 2016	
	Target	Actual
State Forest Invasive Species Treatments	84 acres	104.5 acres
Wildlife Tree plantings (Black Walnut)	N/A	
Greenbrier State Forest Golden-winged warbler habitat creation	17 acres	17 acres
Calvin Price State Forest Savannah Creation	10 acres	22 acres
Wildlife border cutbacks and road daylighting (Seneca SF, Kumbrabow SF)	50 acres	52 acres
Kumbrabow State Forest Red Spruce restoration work Morgan Camp, Trout Run	40 acres	42 acres
Wildlife habitat creation/maintenance with RGS mulcher (Greenbrier SF, Cooper's Rock SF, Kumbrabow SF, Seneca SF)	69 acres	79 acres
Conservation Education and Fire Education	N/A	19 events, 3,855 attendees
Landowner Education	N/A	9 events, 193 attendees

Forest Stewardship Plans (WVDOF) Activity/Treatment	Sites	Acres
Forest Monitoring for Insect Damage	2	73 acres
Invasive Species Treatments	45	444 acres
Wildlife Habitat Creation	49	849 acres
FSP Total Participants	395	61,032 acres
Harvest Notifications	1,522	115,321
Harvest Notification Inspection – Water Quality	2,651	N/A
Harvest Notification Inspection – Final Reclamation	3,965	N/A

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## Private Lands

	Total 2014 - 2016		
	# of Contracts or Plans	Total Acres	
		Target	Actual
EQIP Contracts Obligated	214	N/A	20,234
New Conservation Plans or Forest Management Plans	64		4592

EQIP Practices Implemented		Total 2014 – 2016	
		Quantity	Units
128	Agricultural Energy Management Plan - Written	10	no
313	Waste Storage Facility	52	no
314	Brush Management	1049	ac
316	Animal Mortality Facility	1	no
325	High Tunnel System	236,009.2	sq ft
340	Cover Crop	1030	ac
342	Critical Area Planting	41	ac
351	Well Decommissioning	2	no
367	Roofs and Covers	32	no
374	Farmstead Energy Improvement	17	no
378	Pond	16	no
382	Fence	436,467	ft
386	Field Border	2	ac
395	Stream Habitat Improvement and Management	0.8	ac
430	Irrigation Water Conveyance	3764	ft
430	Irrigation Pipeline	4,764	ft
436	Irrigation Reservoir	1.1	ac-ft.

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EQIP Practices Implemented		Total 2014 – 2016	
		Quantity	Units
441	Irrigation System, Microirrigation	2.9	ac
449	Irrigation Water Management	7.2	ac
472	Access Control	729.9	ac
484	Mulching	10.8	ac
490	Tree/Shrub Site Preparation	25.8	ac
500	Obstruction Removal	0.1	ac
511	Forage Harvest Management	16.6	ac
512	Forage and Biomass Planting	1,749.7	ac
516	Livestock Pipeline	122,157	ft
528	Prescribed Grazing	260.2	ac
533	Pumping Plant	48	no
558	Roof Runoff Structure	441	no
560	Access Road	5,959.0	ft
561	Heavy Use Area Protection	38,223.6	sq ft
574	Spring Development	41	no
575	Trails and Walkways	6,142.5	ft
578	Stream Crossing	27	no
580	Streambank and Shoreline Protection	1,520.0	ft
587	Structure for Water Control	6	no
590	Nutrient Management	3,642.4	ac
606	Subsurface Drain	2,138	ft
612	Tree/Shrub Establishment	75.5	ac
614	Watering Facility	254	no
620	Underground Outlet	9993	ft
634	Waste Transfer	1	no
636	Water Harvesting Catchment	1	no
642	Water Well	630	no

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EQIP Practices Implemented		Total 2014 – 2016	
		Quantity	Units
647	Early Successional Habitat Development/Management	5.7	ac
666	Forest Stand Improvement	49.0	ac

### Success Stories including News Articles and Press Releases:

*Please share a success story from this partnership project. If possible, highlight stories that document conservation successes across landownership boundaries. Please include pictures and a location map. Please share any news articles and press releases that have been issued.*

The successes of WVRV are widespread across the West Virginia landscape, and many have been highlighted over the last few years, through this summary report, agency publications, or field days and tours. However, one success story in particular, completely encompasses the mission, vision, and scope of the Joint Chief's Landscape Restoration Project. It is the embodiment of partnership, stewardship, and the ideal that with education, voluntary conservation works; not only works, but prevails. The Phares' story spans the entire three years of WVRV, and not because Mr. Phares' stream restoration project took that long to install, but because he has championed for the cause. As a contractor and excavator, Mr. Phares worked with NRCS and Trout Unlimited engineers to install his own EQIP contract practices on his own land. When the project was complete, he was so excited by the outcome that he advocated for the program in his community. In turn, he has created jobs, and honed stream restoration skills that few contractors possess, or are willing to attempt. The corridor of the North Fork of the South Branch of the Potomac will be forever impacted by his dedication to the Joint Chief's Landscape Restoration Project in West Virginia. **(SEE ATTACHED SUCCESS STORY AT END.)**

**See Appendix A for multiple briefing papers highlighting success in 2016**

### Blogs, Videos, and Articles Highlighting WVRV Projects:

- Over 60 Briefing Papers with photo documentation exist for WVRV projects. These one page highlights have been used in multiple ways to inform, educate, and promote the work of WVRV. The partnership uses them as a communication tool when highlighting their work audiences and also when talking with the WV delegation both state and federal.
- USDA World Water Day Blog <https://blogs.usda.gov/2016/03/22/celebrating-world-water-day-along-the-eastern-continental-divide/>



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- USDA Soil Carbon Blog <https://blogs.usda.gov/2016/05/12/climate-smart-restoration-of-appalachian-forests/>
- TNC Magazine articles
  - <http://www.wvgazettemail.com/news/20151213/red-spruce-restoration-effort-takes-root>
- WV Soil Survey Cooperative – Soil Carbon Mapping
  - <http://portal.nifa.usda.gov/web/crisprojectpages/0032574-soil-survey-work-in-west-virginia.html>
- Lambert Strip (The Mower Tract Project) <http://forestadaptation.org/LambertDemo>
- Video for Watershed Restoration and Partners <https://www.youtube.com/watch?v=gM-DZupQlGM>
- Video for Landscape Scale Restoration and Climate Change Adaptation <https://www.youtube.com/watch?v=hHJpd6IoSws>
- PBS News Hour broadcast highlighting a tree planting event on the Mower Tract with Pocahontas County and Nicholas County school students (to be aired in spring 2017).

### Lessons Learned:

*Please describe any lessons learned or successful practices, including how you adapted your approach, implementation or partnership goals; the impact the challenge or new information had; and any recommendations for other partnerships in the future. For example, did you run into any unforeseen circumstances or barriers that prevented you from achieving project goals or have required you to adapt the project goals? If so, please describe the circumstances and the actions that you took to address them.*

*How did having a Joint Chiefs' LRP project affect other aspects of your program of work outside of this landscape?*

Issue or Barrier/Change in Circumstance	Adaptation or Course Corrections	Impact	Recommendations
Changes in state level funding for WV DOF resulting in major workforce reductions	Look within to find mechanisms that allow the partnership to support the state and its initiatives and projects that are part of the priority landscapes. JCLRP allows for leverage for soft money funding that can be used to help fund the state's projects as part of the greater partnership effort.	The reduction in work capacity prevents planning and project implementation. Responses to requests for information become more difficult with lack of staff to respond.	Be aware of state political issues and stay connected during the state legislative session. Look to use authorities that allow federal partners to provide assistance to the state where there are shortfalls. Have leadership meetings to discuss the crisis and a collaborative response. Become educated about the reasons why reductions occurred.

# **Joint Chiefs' Landscape Restoration Partnership (LRP) Project FY 2016 Final Report**



Issue or Barrier/Change in Circumstance	Adaptation or Course Corrections	Impact	Recommendations
Change over in leadership and key staff positions	Met with new leads, conducted briefings and hosted a field tour with key new staff.	None – new leadership is doing a great job and passionate about vision and partnership	With new staff, visiting projects on the ground in landscape tours with key partners and projects is very helpful to demonstrate concepts. Having integrated discussions in the field works to bring consistency in concepts. Having the partners do the training and introducing concepts to new players is also key. The partners are the ones that have the best ability to be the glue between the governmental entities.
USDA NRCS continues to have administrative constraints that provide challenges to partnering through grants and agreements.	Look within the partnership to find another entity that can play a substitute role. FS has looked to its partner in West Virginia University (as part of the Cooperative Soil Survey Partnership) and entered into agreement to complete data collection for ESD mapping and developing tools to guide future landscape scale restoration in the red spruce ecosystem.	Entering into agreement with university changed the roles of each partner. NRCS will become quality control while WVU will collect data to the standards of NRCS. The emphasis shifts slightly as to who does what. Data is collected by less senior staff; however, there is an educational opportunity here to further the understanding of how the ESDs and interpretations are developed. This also allows for peer review scientific publication which furthers the credibility of the developed restoration tools.	Continue to have regular field and monthly meetings with all partners. Select graduate students that have a desire to work with ecological sites and want to become USDA PATHWAY employees. This is actually an excellent tool for producing work and developing future staff.

## Joint Chiefs' Landscape Restoration Partnership (LRP) Project FY 2016 Final Report



Issue or Barrier/Change in Circumstance	Adaptation or Course Corrections	Impact	Recommendations
Obtaining matching partnership funds as opportunities arose. (Grants and Agreements requirements for a minimum of a 20% match; cost share agreements require a 50% match)	We are sometimes able to look to other partners that have more capacity. Innovation and creative match capital is a way to help partners step up to the table to participate in the projects. Moving the project to a future timeframe has also worked.	Partners often need time to fund raise. When working in a more spontaneous environment, there is not enough time to allow for them to raise capital. This results in a lost opportunity and less leverage and less work capacity in implementing conservation on the ground.	Have an excellent Grants and Agreements Coordinator assisting in preparing the partnership instruments and outlining the project. Have enough knowledge about the long term goals so that pieces of a project can be moved into the future when partners have completed fund raising. Appeal to national initiatives and national partnership offices by highlighting the local successes. Also sometimes extending the ability to spend the money helps to resolve the issues. Investigate the possibility for a waiver that does not require a match for a special project or PILOT initiative.

The cumulative lesson learned in the past three years is in the acceptance of the amount of time it takes to actually learn and understand your partners to work this closely together. It takes time to build a true understanding of the roles and missions of each player. Each partner is defined by a set of hard and soft boundaries. Agency cultures can be so different that although we all practice conservation management, we don't speak the same conservation language. We use different terms to mean the same thing. Taking time to learn and invest in understanding your partner is how a strong partnership is cemented. After three years of learning and growing pains, the commitments to each other are real; and people are vested in a new way of delivering conservation. Our NGOs have done much to help connect us and keep us focused when there was chaos or discord in approaches. Our collective commitment is stronger than the difficulties and the challenges. Finding the right project leads and relying on partners to help government agencies be more to communities than just a funding source is key. Building trust is paramount to the overall success, and regardless of the amount of money or profile of a project, this takes time. Three years seems to be just enough time to know if you can truly continue to grow together in the future with a new vision.

## Joint Chiefs' Landscape Restoration Partnership (LRP) Project FY 2016 Final Report



### **Moving Forward:**

*What did Joint Chiefs' LRP allow you to accomplish that you could not/had not previously been doing?*

*What are your plans for continued partnerships and maintenance of projects in this area?*

The Joint Chiefs' LRP gave West Virginia the platform to finally unite many of the state's conservation leaders in a new vision for a true landscape scale restoration approach. The initiative provided the challenge and the seed money to look at conservation in a focused manner. In that shared vision, the partnership looks into the future and sees the state's many initiatives in a new light. We started collectively in 2014 planning across the landscape to address a long list of ecosystem services by acting to reclaim, restore, and enhance the landscape. By 2016, we have new initiatives that look to develop focused conservation areas

(<https://www.nrcs.usda.gov/wps/portal/nrcs/detail/wv/programs/financial/eqip/?cid=nrcseprd1167606>), and strengthen our collective connectivity to our State's Forest Action Plan. Our NGO partners are leading us in a direction that we could not go without them, connecting both the federal and private lands in critical headwater landscapes, and we are looking to our underutilized federal authorities that allow us to work across boundaries and on all lands.

Here in the East, we often forget that the landscape once looked very different than it does today; however, this initiative helps us to focus and strategically think about what it means to restore landscapes and build resiliency. With those ideas in mind, we now can work towards our common goals. The JCLRP enhanced our ability to utilize all of the authorities provided to us that create vehicles for crossing boundaries and bringing conservation to the ground in a landscape manner.

Our partners utilized the success of this initiative to build conservation bridges between federal and private lands. Trout Unlimited has been an exemplary partner working with both NRCS and FS, transferring knowledge and starting a culture of working with a community to address watershed health in the headwaters of the Potomac and the recently heavily impacted Greenbrier River watershed (June 2016 Flood Event). Their success has led to an exciting RCPP proposal for 2017. With their support and with the encouragement of our communities, the WVRV initiative has morphed into a maturing relationship and seeks now to leverage new partnerships.

In 2017, we are taking on a new name and expanding our efforts to further support a restoration economy. The Appalachian Ecosystem Restoration Initiative (AERI) is expanding and encompassing communities that were devastated by recent floods. We seek to replicate and foster the model relationship that Trout Unlimited has established in watershed improvement projects, which helps headwater systems to become more resilient to a variety of stresses. We seek to extend our initiative on carbon sequestration by courting the growing interest of corporate citizens who wish to become more carbon neutral through restoring critical landscapes and capitalizing on natural carbon sequestration processes. We believe that we have much more to learn from each other as well as more to teach others. We are determined to lead by example through our actions and our support for conservation management in West Virginia and the surrounding landscapes of Appalachia.

## Joint Chiefs' Landscape Restoration Partnership (LRP) Project FY 2016 Final Report



### Signatures:

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State Conservationist, WV NRCS

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Forest Supervisor, Monongahela National Forest

### APPENDICES ATTACHED:

Appendix A – WVRV Project Briefing Papers  
Appendix B – List of all partnerships for WVRV  
Appendix C – Project location Maps





### Results/Other Details

After conferring with professional staff from the NRCS and TU, Phares enrolled into the NRCS EQIP program administered through the West Virginia Restoration Venture (WVRV). Conservation practices installed included:

- Over 1 mile of in-stream habitat and 3.6 acres of riparian habitat restored.
- Installation of 11 large wood and rock structures
- The exclusion of livestock from one mile of riparian and in-stream habitat
- 0.5 Miles of eroding stream banks stabilized

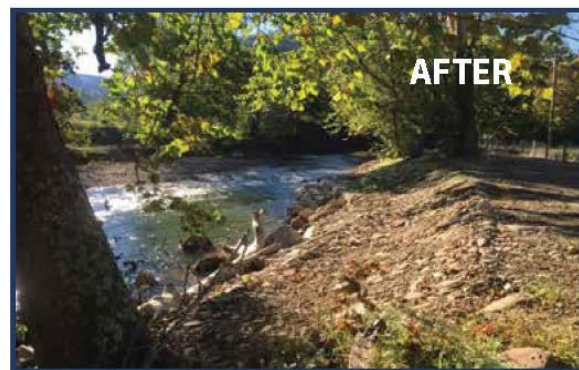
In addition, Raymond, TU, and the NRCS have worked together to reach out to close by neighbors to contract another 3 high quality main stem river projects, upstream of his location to the benefit of another mile. Linking these contiguous projects through the WVRV Initiative, partners have been able to start at the top of the watershed, working their way downstream, linking restored riparian and in-stream habitat on private and public lands.

### Description

The mighty Potomac Headwaters are a strong hold for clean water in West Virginia, and host some of the largest patches, or genetically interconnected populations (Eastern Brook Trout Joint Venture 2012), of brook trout in the state.

One particular focal area for conservation in this region is the North Fork of the South Branch Watershed, aka the North Fork. As you travel downstream and enter onto private lands, evidence of aquatic and riparian resource concerns are seen as a result of poor land management practices associated with development, timber harvest, agriculture, and post flood recovery activities.

The Phares' own approximately 0.5 mile of the main stem of the North Fork, and another mile of one of its tributaries. In 2015, Raymond Phares, a local contractor and agricultural producer reached out to the NRCS and TU for restoration assistance. His resource concerns for this particular section of the North Fork were over-widened and eroding of stream banks that lacked pool habitat, livestock had full access, and the fishery had declined substantially.



**Year Project Initiated:** 2015

**Partners Involved:** USDA-NRCS, TU

**Contact Person:** Doris Brackenrich, District Conservationist, USDA-NRCS, [doris.brackenrich@ww.usda.gov](mailto:doris.brackenrich@ww.usda.gov)